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Third-Gen SiC MOSFETs Enhance Performance For EVs

STMicroelectronics' third-generation STPOWER SiC MOSFETs are specifically optimized for automotive EV applications including EV traction inverters, on-board chargers, and dc-dc converters, as well as e-climate compressors. The new devices also suit industrial applications by boosting the efficiency of motor drives, renewable-energy converters and storage systems, as well as telecom and data-center power supplies.

ST has completed qualification of the third-generation SiC technology platform and expects to move most of the derivative products to commercial maturity by the end of 2021. Devices with nominal voltage ratings from 650 V and 750 V up to 1200 V will be available, giving more choices for designers to address applications operating from ordinary ac-line voltages up to those of high-voltage EV batteries and chargers. The first two products available are the SCT040H65G3AG, a 650-V 40-mΩ typ. device in an H2PAK-7 package (priced at $5.00) and a 750-V device in die form (datasheet and quotation upon request).

Leveraging the third-generation SiC platform, ST's latest planar MOSFETs set new industry-leading benchmarks for the accepted figures-of-merits (FoMs)—on-resistance (R_{ON} x die size, and R_{ON} x gate charge (Qg))—that express transistor efficiency, power density, and switching performance.

ST will offer the third-generation devices in various forms, including bare die, discrete power packages such as STPAK, H2PAK-7L, HiP247-4L, and HU3PAK, and power modules of the ACEPACK family. The packages offer innovative design features such as specially placed cooling tabs that simplify connection to base-plates and heat spreaders in EV applications.

For further information about ST's SiC portfolio and the latest third-generation MOSFETs, see the SCT040H65G3AG page and the STPOWER SiC MOSFETs page.